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NOTES FOR A STATEMENT

BY

THE HON. DONALD S. MACDONALD

TO THE

STANDING COMMITTEE ON NATIONAL RESOURCES

AND PUBLIC WORKS

TUESDAY, MARCH 28, 1972

11:00 AM

Pan.042 [Macdonald D.S.]
28/3/72

MR. CHAIRMAN, COMMITTEE MEMBERS:

In my address to the House of Commons on February 24th last in the debate in reply to the Speech from the Throne, I tried to raise in some very specific ways the concern of Canadians about the husbanding and wise use of our resources and energy, both for generations present and yet to come. I sought to establish the centre-stage role for our economic and social well-being, for our national development goals, for the balance in our Federal-Provincial relations and for our continental and international relations which is played by our policies for and our management of our resources and energy. I tried to illustrate how the adoption of alternative courses for our resource and energy policy management could have consequences fundamental in their impact on the future character of Canada as a whole and on our various regions.

What I said in the House of Commons on February 24th, together with the remarks I will make today, will, I hope, be taken as laying a foundation for an objective and constructive examination of Canada's needs in the resources and energy sector. I would like to take this opportunity to add some thoughts of a policy-oriented character to my previous remarks and, additionally, I would like to be more specific about the activities of the agencies and of the Department under my responsibility in order to focus your attention on the considerable efforts being made in the resources and energy policy community to address Canadians

to the real issues and to the options which are available for choice by conscious policy direction.

As a result of the growing realization in Canada of the key logistical role played in national policy by the resource and energy sectors, there is an urgent new requirement for the re-examination of the policies which we now have in play and which I believe have served us reasonably well to date, and for the development of new and, at least in many cases, better articulated and explained reasons for our choices in the immediate future.

During the year 1972, it will be my prime objective to conduct this re-examination so as to be able to present, for the consideration of all Canadians, a coherent explanation of the objectives and success of our current resource and energy policies, and to develop for debate and resolution, essential directions for the future.

Examination of the resources and energy sector in a country like Canada involves an examination of the kind of society we seek to have. What can our geological potential supply to us and at what cost? Do we need as much as that and do we want to pay as much as that? In weighing the answers, we must look at the kind of industrial growth we want, the amount of foreign ownership we feel is consistent with our welfare, the realities of efficient economic development based on scale and distribution of activity,

the impact on the environment and the quality of life, our continuing willingness and, indeed, desire to maintain approximately the same standard of living as that of the United States, our attitude towards the work ethic and its impact on the way we look at ourselves and our responsibilities to one another. All these questions, and more, must be resolved in order to ultimately know what kind of a resource and energy policy will be satisfactory to most Canadians.

Some trends for our future policy directions are now evident. In the past, when our various communities in Canada were separated by considerable distance and communication and transportation took some time, we were required to deal with our resource and energy problems in isolation, in a regional context, and almost always confined to conditions for an individual energy source. The same was true for the development of our mineral resources and their utilization. Solutions in the future, based on a Canada in which communication amongst our regions is almost instant and transportation is nearly so, will require appraisals of an entire energy sector and an entire resource requirement and development sector, and all of this must be conducted in a strategy within Canadian economic and social development.

For example, our energy demands are projected as likely to quadruple between now and the year 2000. To meet such a startling requirement will necessitate total energy sector planning which will,

in turn, require national policies for co-ordination and development.

A second example may be seen in the competition for the same stock of national capital, goods and services for which a multiplicity of resource and energy plans and priorities will have to compete. In the oil and gas sector in Canada alone, in the 1970s, the industry estimated its direct requirements at about \$25 billion. The resources and energy sector, taken together, could provide us with a financial challenge well in excess of \$50 billion.

In order to support, with confidence, a national decision to invest in this scale in the resource and energy sector, we are going to have to have a much greater understanding of such questions as the adequacy of our resources at given prices for a whole range of energy sources including, coal, oil, gas and nuclear power, and for a whole range of our mineral requirements for a growing industrial development program in Canada. We will need to know where new technologies are required. We are going to have to understand whether market demands are rational, long-term and stable or transitional and unable to bear the responsibility for amortization. We will need to know what policies will be self-supporting and growth-oriented and what will require subsidy and the distribution of an additional burden on our economic and social capabilities. Our alternative priorities will need to be met in assessing regional benefits to be derived from proposed

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development. Capital markets which have traditionally served the resource and energy sectors may be incapable of providing the same service in the same manner in the future.

In attempting to achieve policy directions which will provide to us specific economic and social progress by economic growth, regional benefits, full employment, increased international trade, equitable distribution of rising incomes and an improved quality of life, we will be constrained by the realities imposed on us by the adequacy of our resources, the availability of our capital, the balance of our payments on current and capital account, the realities of our Federal-Provincial relations and of our opportunity in international market places.

The Federal Government must accept the responsibility for setting the broad policy options which reflect the way in which Canadians want to live and develop their country, and to administer such a policy and to influence developments, we have available to us a large number of levers. I refer to national policies for the disposition of oil and gas rights and mineral rights on Federal lands; financial support for resource and energy activities which ranges from research and development grants for nuclear generation to coal production support programs; the provision of transportation and communication facilities; regional development policies; export and import controls of various kinds; safety and environmental regulations; the management of our balance of payments and the stability of our dollar in domestic and international commerce,

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and, generally, our legal and constitutional powers.

How these levers are to be utilized can only be seen after we have completed a national audit of our resource and energy policies and made our choice for the kind of Canada we want from the realistic options which are available to us. Clearly, we know we are committed to a policy of economic growth, but how fast and in what directions we cannot yet be sure. Clearly, our growth must be orderly and where projects sponsored in various places in Canada can have a significant impact on our economy and become bunched together within too short a time frame, we know we can suffer economic distortions with an unwarranted cost to the economy expressed through inflation, a rising foreign exchange rate and reduced exports. In employment intensive industries, such a disarray would clearly exceed direct national benefits which the projects themselves would provide. Therefore, the Federal Government has the responsibility for ensuring full consultation amongst energy project groups on such matters as the desirability, timing and magnitude of their investment programs.

Our national resource and energy policies must therefore include capability to adequately forecast and monitor capital investment intentions and for the development of mechanisms and procedures which, given the co-operation of Provinces and industry, would provide a means for accommodating all essential projects within an acceptable framework.

It will be an essential of the Federal role to try to establish guidelines which will respond to priorities reflected in a national consensus and to provide overall co-ordination for the necessary processes needed to make the policy work.

Mr. Chairman, I would now like to present to the Committee an over-view of the activities of the agencies and the Department for which I have responsibility so that I may illustrate and develop, through the activities which I will describe, the means by which we are seeking to develop our understanding and our abilities to deal with the issues which I have been describing.

URANIUM CANADA, LIMITED

I will begin my comments with a few words about the newest Crown Corporation for which I am responsible: URANIUM CANADA, LIMITED.

Committee members will be aware that established communities in Canada, particularly at Elliot Lake, Ontario, and Uranium City, Saskatchewan, have been undergoing considerable economic and social difficulty as a result of depressed conditions in the international market for the uranium-producing industry. In order to ameliorate the problems of these communities, the Government of Canada established a stock-piling program in 1965 and a second stock-piling program in 1968, in the hope that these programs would bridge the gap for those industries and communities. Unfortunately, the growth of nuclear reactor capacity in the world did not proceed

in the latter 1960s at the rate projected for it, and we found, at the end of 1970, with the conclusion of our second stockpile program, that at least one of our producers - Denison Mines Limited - had been unable to secure sufficient contracts to ensure its continuous operation prior to 1975.

There was no doubt on the part of the Government that the shut-down of Denison Mines Limited would wreak a disastrous blow on the Elliot Lake community, nor that within a very few years the demand for uranium would be such that full production would have to be restored and additional uranium reserves developed in Canada for the international market place. Accordingly, it was decided to institute a special program of stockpiling with Denison Mines Limited alone, and Uranium Canada, Limited was brought into being for the purposes of acting, in joint venture with Denison Mines Limited, in the acquisition and sale of this special new stockpile. Uranium Canada, Limited has also been given the responsibility of holding the previous stockpiles established and for administering policies for their disposition in accordance with the maintenance of continuing stable operations amongst existing producers.

Under an agreement between Uranium Canada, Limited, and Denison Mines Limited, 6,647,000 pounds of U₃O₈ will be established in a jointly owned stockpile during the period 1971 to 1974. Uranium Canada, Limited will hold a 75% interest in this stockpile and Denison Mines Limited the remaining 25% interest. The Government's

cost will total not more than \$29.5 million and will bring the approximate value of all uranium stockpiled by the Government of Canada to \$130 million of original capital cost.

The joint efforts of Denison Mines Limited and Uranium Canada, Limited for the sale of the joint venture stockpile have had some initial success. With Denison Mines Limited acting as the sales agent, an agreement has been entered into with a Spanish Government Commission, acting on behalf of Spanish Electrical Utilities, which will involve the sale of uranium from both the joint venture and general Government stockpiles. The quantity of the sale is approximately 8.9 million pounds and deliveries will be effected between the years 1972 and 1977 inclusive. On February 25th last, I stated that the total consideration of the sale would be in the approximate amount of \$60 million. Further details cannot be released until final agreements have been settled.

Committee members will be aware that the Government of Canada has taken steps for the holding of discussions at an international level regarding the state of the uranium industry and of the development of nuclear programs. We firmly believe that the unduly depressed prices for uranium which are prevailing act as the major disincentive to the active exploration of a very considerable geological potential in Canada. In addition, the search for uranium

in Canada, because of the remoteness of many of the most promising areas, has a somewhat higher cost than in some other parts of the world, including Australia which has recently developed some interesting new prospects.

In the absence of international market stability, the development of the resource required for the nuclear power industry in the 1980s will not be ensured, with the possible consequence of a critical shortage of supply developing in that period. Mining exploration and development of uranium requires a period of between six to ten years, and the time for the commencement of new initiatives in exploration is now short.

While I am mentioning uranium exploration, I should also like to refer to the Government's announced intention of introducing uranium and thorium ownership legislation which will have, as its effect, the limitation of foreign ownership and control in this sector of our economy. I have carefully considered proposals for legislation which have been developed in my Department, and submissions which I have received from industry with respect to the impact which ownership and control legislation will have on future development. I am also reviewing these legislative proposals in the light of Government policy for the domestic control of the economic environment, and intend to make clear the Government's position in the area of uranium ownership and control in time to allow mining companies interested in uranium in Canada to develop plans for the 1973 exploration season.

ELDORADO NUCLEAR LIMITED

I am sure that Committee members are familiar with the role of Eldorado Nuclear Limited, but perhaps I should mention its incorporation as a Crown Corporation in 1944, as the successor to a private company known as Eldorado Mining & Refining Limited, which was operating a uranium mine on Great Bear Lake and a small uranium refinery at Port Hope, Ontario. I have reviewed with you the conditions, generally, of the uranium mining industry during the 1960s and these conditions have had their impact on Eldorado Nuclear Limited. Since 1968, its cash flow has been insufficient to support capital programs and the production of uranium concentrates in inventory. This deficit has been met by loans from the Government of Canada in the years 1969 to 1971, and the estimates now being considered provide for further loans in fiscal 1972-73. The cost of servicing this debt has also contributed to net losses incurred in recent years. A loss is projected again in 1972.

We now have under study a long-term outlook for Eldorado, and depending on events now being considered in the international uranium community, there may be some opportunity to effect a turn-around in this trend.

The share of market for uranium concentrates which Eldorado will obtain is very difficult to forecast at this time, but it is obvious that the Western world production of uranium must quadruple

by 1980 if the power reactors already in service, under construction or committed are to be supplied with fuel. As a long-time producer, with substantial ore reserves and excellent prospects for extension of these reserves, with its world-wide commercial contacts, and with its mining plant largely amortized, it should not be unreasonable to expect that Eldorado may obtain its fair share of this expanding market.

Eldorado also carries out a refining operation at Port Hope which is one of the most advanced to be found anywhere.

Prospects for profits in the refining operation are most promising in the post-1972 period. The dramatic success of the CANDU-type reactors of Ontario Hydro at Pickering will inevitably give impetus to the building of further natural uranium reactors in Canada. This, in turn, has the potential of providing Eldorado with a substantially expanded demand for uranium oxide conversion services, and of enabling Eldorado to resume the production of zirconium metal which is used in alloy form for reactor components and fuel element sheathing.

Further, the continued growth of nuclear power in Canada will provide an opportunity for Eldorado to enlarge its participation in projects such as developing new types of fuel, and the handling and transportation of spent fuels.

Of the greatest significance, however, is Eldorado's uranium hexafluoride conversion service, which has already met with wide

acceptance by power utilities in the United States, Japan, Sweden and Germany. Orders in hand, and conservatively estimated new business, will dictate a doubling of the original capacity of this plant by 1974. This will have a decisively beneficial effect upon financial results, since the expansion can be achieved at a relatively modest cost because the original design provided for expansion.

ATOMIC ENERGY OF CANADA LIMITED

The involvement of the people of Canada in the whole uranium and nuclear energy sector is particularly emphasized in the performance of Units 1 and 2 of the Pickering Generating Station - Canada's first large fully commercial nuclear power plant for which Atomic Energy of Canada Limited designed the nuclear system and controls. In December 1971 and January 1972, the last two months for which world-wide figures are available, Pickering produced more electricity than any other nuclear power station in the world.

All Canadians can take a great deal of pride in the technological and scientific competence which we have demonstrated in the nuclear reactor field. A short time after World War II, we set a determined course on the path of nuclear energy for peaceful uses and, in the process, began to develop our own nuclear reactor system. This development, a costly one by Canadian standards - we have well over \$1 billion invested in our efforts so far -

came under increasing attack from the scientific and political communities as our choice of technology began to differ substantially from that adopted by such major technical nations as the United States, Great Britain and France. Most of the non-Canadian nuclear reactor systems now are light water moderated and rely on enriched uranium fuel. The scientific and technical competence for processing this enriched fuel on a commercial basis is exclusively the property of the United States. Accordingly, the industrial nuclear energy capability of Western Europe and Japan is wholly reliant on the continuing policies of the United States to supply enriched uranium. In Canada, the CANDU system is heavy water moderated and uses natural uranium. We need rely on no foreign technology or source of supply for our nuclear electrical energy programs.

With the ability of Pickering to out-perform any other nuclear electrical generating system in reliability of power produced in continuing operation, in considerably lower operating costs, we are hopeful that the utilization of the Canadian CANDU system will attract increasing international attention. There is no doubt that industrial countries diversifying their energy programs to nuclear sources will take a substantial interest in the performance of the Pickering plant, and if it continues to perform at current levels over a longer period of time, then I believe we will have established something spectacular in demonstrating the scientific and technical competence of Canadians.

I am now giving consideration to national policies which will encourage the diversification of sources of energy supply to nuclear from more traditional sources, and particularly from foreign-based oil which, under present world circumstances, cannot be described as wholly secure.

While Canada's CANDU system is not dependent on foreign enrichment of uranium, it does require larger quantities of heavy water than most other systems. Members of the Committee know that the Government of Canada, through Atomic Energy of Canada Limited, is endeavouring to rehabilitate the heavy water plant at Glace Bay, Nova Scotia. We see a clear demand for heavy water in the years ahead and, while many other sites might have been available to us, it was ultimately decided that the rehabilitation of the Glace Bay plant, owned by the Province of Nova Scotia, should be given a priority - in part to allow that Province some opportunity to recover at least a portion of the outstanding \$120 million of capital and interest which it has invested.

ATOMIC ENERGY CONTROL BOARD

Votes 20 and 25 relate to the expenses of the Atomic Energy Control Board, set up in 1946 to enable Canada to control dealings in atomic energy materials and equipment and participate effectively in international control measures.

The Board licenses the acquisition, production and use of scientific atomic energy materials and carries out inspections of Canada's atomic energy facilities to ensure that these materials are controlled in the interest of health and safety and that they are not diverted to improper use.

The formal licensing system for nuclear reactors was established in 1957 and a similar system for nuclear accelerators was established in 1970.

A safeguards development program in co-operation with the U.S. Arms Control and Disarmament Agency, the United States Atomic Energy Commission and Atomic Energy of Canada Limited, to develop tamper-resistant, tamper-indicating, unattended inspection instrumentation has continued at the NPD Generating Station. Because of the promising results of this program, Ontario Hydro has recently agreed to a test of the instrumentation on one of the four units of the Pickering Generating Station. The development of suitable instrumentation could reduce considerably the number of inspectors required to safeguard the strategic materials in an on-power fuelled nuclear reactor. Most of the capital expenditures in Vote 20 will be required for this development program.

The Board has, since its inception, assisted Canadian universities primarily by providing funds to enable them to purchase and operate major items of atomic energy equipment. Vote 25 is intended to continue this assistance for some 11 Canadian universities, and for the TRIUMF (Tri-University Meson Facility) project of the University of British Columbia, Simon Fraser University, University of Victoria and University of Alberta. This latter project is concerned with the design and construction of a 500-million-volt proton spiral ridge cyclotron and its subsequent operation as a research tool in the developing field of intermediate energy nuclear physics. Of the total amount requested (\$7,495,000) under Vote 25, \$4,900,000 is intended for the support of this project.

NATIONAL ENERGY BOARD

Mr. Chairman, I would like to refer briefly to the work of the National Energy Board.

As you are aware, the broad purpose in establishing a National Energy Board in 1959 was to enhance the best use of energy resources in Canada and in this regard Parliament conferred on the Board two major functions. In its regulatory role the Board is responsible for adjudicating upon applications for licences to export and import natural gas; applications to construct and operate interprovincial and international pipelines for the transportation of petroleum and its products and of natural gas; and applications for licences to export electrical power and energy and for certificates to construct and operate international power lines. In addition it is responsible for regulating the rates, tolls and tariffs of oil and gas pipelines under its jurisdiction.

In its advisory role, the Board is required to keep under review all matters relating to energy within the jurisdiction of Parliament and to recommend any measures the Board considers necessary or advisable to undertake in the public interest to ensure proper use and development of energy and its sources.

With regard to its regulatory responsibilities the demand on the Board to hear applications in all phases of energy segment under its jurisdiction continues to grow. And, as may be expected, as the demand for energy increases in relation to supplies, the issues which the Board must consider and render decisions upon are becoming more complex. This is reflected, in part, in the number of hearing days which in 1971 totalled 105. Some 78 days of this total was spent by the Board on the First Phase of an application by

Trans-Canada Pipe Lines Limited for permission to increase its rates for the transmission of gas in Canada. The Board's Reasons for Decision issued on December last is an important precedent regarding the regulation of gas pipe lines in Canada. The Second Phase, which will be concerned with the determination of the tolls and tariffs to be charged by the Company, will commence shortly.

Pipe lines in the north, like pipe lines elsewhere under the jurisdiction of the Parliament of Canada, will be subject to the National Energy Board Act. The Board has been conducting various studies and is keeping itself informed regarding research being conducted by Federal agencies and Department and by industry.

A continuing review of all public activity in the field of pipelining in the north is a necessary function of the Board in order that it may properly fulfil its role when the time comes to consider applications for the construction of oil and gas pipe lines in those regions. Indications are that the first such application may be filed with the Board late 1972 or early 1973.

The Committee will also recall that the Board is the Government's instrument for implementation of the national oil policy. This policy, which essentially has involved maximizing the use of indigenous oil while encouraging reasonable levels of exports of oil in Ontario, has been successful in stimulating western Canadian oil production and in enhancing the security of the nation. It will be of interest to this Committee that oil exports last year was our fifth leading export. Crude petroleum products plus natural gas together make up Canada's second leading export.

Last year, imports of oil supplied about half of our domestic market comprising eastern Ontario, Quebec and the Atlantic Provinces. The Board carefully monitors the volume, sources and prices of our oil imports. As members are also aware, the Board controls gasoline imports by regulatory procedures.

With regard to electrical power, applications to the Board for the export of electricity and the construction and operation of international power lines continue to require the Board to conduct extensive analysis of Canadian electric utility operations and United States market conditions. In recent years, there has been a clearly discernible trend toward more complex export arrangements requiring more comprehensive studies of the implications with respect to national energy policy.

The National Energy Board was created by Act of Parliament in 1959 with one of its main objectives being the establishment of an independent economic court for the receipt of applications, the review of evidence, the establishment of essential criteria for decision-making, and for arriving at a reasoned conclusion based on the facts before it. Where the National Energy Board comes to a conclusion negative to the applicant before it, then the decision of the Board on the substance of the application is treated as final. There is no reference nor process of consultation with Government with respect to the determination of that particular conclusion. However, in the case of a positive recommendation by the Board for the construction of a pipeline or the export of natural gas from Canada, as examples, then the Board's conclusion is sent, by way of a recommendation, to the Governor in Council, which must

finally pass on such decision. I mention these facts concerning the responsibilities of the N.E.B. because I am concerned with statements made in various places in Canada that in some way, the Government of Canada played a role in the decision of the N.E.B. in the latter part of 1971 against the export of certain applied for quantities of natural gas from Canada. I suppose I could have no reason to object to statements arguing that the decision of the Board on any subject is wrong. Arguments of that kind are part of the continuous process of energy policy debate. What I do object to most strongly are statements suggesting that the decision of the Board is in pursuance of some more general strategy of energy relations between Canada and the United States, or between the Federal Government and certain Provinces. Arguments to the effect that the Board would be used as a policy pawn in Government energy strategies are absolutely horrendous in their character. They are untrue and they argue, in effect, that the judges of the independent tribunal are influenceable by considerations of a policy character not before them. I, for one, do not believe that the wise policy of establishing the National Energy Board as an independent economic court should be changed.



DEPARTMENTAL ACTIVITIES

Mr. Chairman, perhaps I should turn at this point to the activities of the Department, because it is here that the co-ordination of policies for energy and resource management resides.

The Prime Minister, in early January 1972, raised for Canadians the key economic priority sectors in the 1970s: a strategy for industrial development and growth; policies for domestic control of the national economic environment and a strategy for resource and energy development.

The Prime Minister has emphasized the growing role of resources in the national political economy, and has made clear the inter-relationship between the national industrial strategy, the growth of our secondary industry, and the role of resources in that strategy in the total policies which Government must follow in the development of our national wealth. This emphasis on the growth of national wealth in Government is the major premise for all priorities.

The objective of the Department of Energy, Mines and Resources (EMR) is to enhance the discovery, development and use of the country's mineral and energy resources and to broaden our knowledge of Canada's land mass for the benefit of all Canadians. For these objectives, the Department devises and fosters national policies based on research and data collection in the earth, mineral and metal sciences and on social and economic analysis. We require

capability in all phases of non-renewable resource management.

The scientific and technical organization which EMR has built up over the years provides the capability to assess energy and mineral resource potential and improve the means to discover, develop and use it. The Department, which is the nation's leader in earth sciences, provides the basic physical information which contributes to the understanding of our planet and the integral environment in which we exist.

The Department's programs are basically concentrated in two inter-related sections: the earth sciences program designed to continue to develop the basic scientific and technical knowledge which we require about our land mass, and the energy and mineral resources program which has as its objective the development of policies and programs for the management of our national resources and energy capabilities. In EMR we take an integrated team approach to the various missions which are ours. In problems in the energy sector, we will combine all of the capability wherever it is to be found in the Department in a single integrated program. For example, we have established in the Department a departmental co-ordinating committee for environmental matters. This committee is composed of representatives of each of our scientific and technical branches and of our mineral and energy policy sectors. The committee monitors the classification of problems in their environmental components and mobilizes the resources of each part of the Department to deal

with such problems and to represent the interests of rational resource management in interdepartmental, inter-Government and Government-industry discussion. In this fashion, the Department has made a significant contribution to the preparation by the Government for its role at the United Nations Conference on the Human Environment in Stockholm in June 1972.

Let me make as clear as I can the point that the Department is not a Department for economic growth in the resource and energy sector. It is a Department for economic development in a balanced framework in which all of the competing objectives and uses must be assessed and weighed in order to achieve an optimum and not a maximum performance.

Let me review for you again some of the complex issues in the resources and energy economy which we face.

First, the orderly development of the resource base and the expansion of domestic and foreign markets; second, capital availability and issues relating to ownership and control; third, taxation policies. Fourth, there are major problems requiring new policies in the Arctic frontier and in the ocean frontiers off our two shores. Fifth, there is the question of economic growth and the establishment of environmental quality standards. Sixth, the serious question of the need to integrate energy supply and demand patterns and to achieve reasonable energy costs. Seven, the establishment of viable coal and uranium industry development. EIGHT, the creation of transportation systems at realistic costs, and finally,

but not least, the stability of communities that are dependent on the resource industries for the well-being of their people and the future of their children.

These and other problems have brought into sharp focus the need for the Federal and Provincial Governments, as well as industry, to play a closer and more effective role in our resource development as an urgent matter of national interest. There is increasing acceptance of the interdependence of our respective roles and the clear fact that national policies, to be effective, must be the result of our combined experiences, our shared purposes and our common needs.

I am satisfied that the Department is working effectively to deal with its responsibilities. Under way are reviews of mineral and energy policy - with a target for completion towards the end of 1972. These studies are designed to evolve recommended national strategies for resource and energy development and to point to various options open to Canada for the achievement of defined goals. Such policies should provide a framework to the solution of specific problems related to such industries as oil, gas, uranium, nuclear energy, electrical energy, coal, and many others.

Committee members will be aware that several of the Provinces are also now conducting energy policy studies of their own, with target dates announced throughout 1972. These Provincial studies



should clearly benefit our own studies and allow an informed basis for dialogue between the Federal Government and the Provinces.

During the coming year, the Department will continue to expand its capability and activity in financial and corporate analyses. These aspects of our insights into development policies are vital in understanding the operation of the Canadian economy. We hope this direction will also ensure full attention to problem areas of immediate concern such as the effect of development on corporate and industry structure, ownership, profitability, financing and the balance of payments. For example, one of the analytical and research projects we will be conducting will be a study of the financing implications of northern pipelines.

ESTIMATES FOR 1972-73

Estimates for the fiscal year 1972-73, as tabled in Parliament, provide for total budgetary expenditures of \$89,063,000 vs \$85,342,000 in 1971-72 for the Department of Energy, Mines and Resources (Estimate Book, page 5-2). This represents an increase of \$3,721,000 over estimates approved for 1971-72 and is (\$19,048,000) higher than the actual expenditure in 1970-71. In addition to Budgetary expenditures, provision is included in the Estimates for a further loan to the Hydro-Quebec Research Institute in the amount of \$2,500,000.

MINERAL AND ENERGY RESOURCES PROGRAM

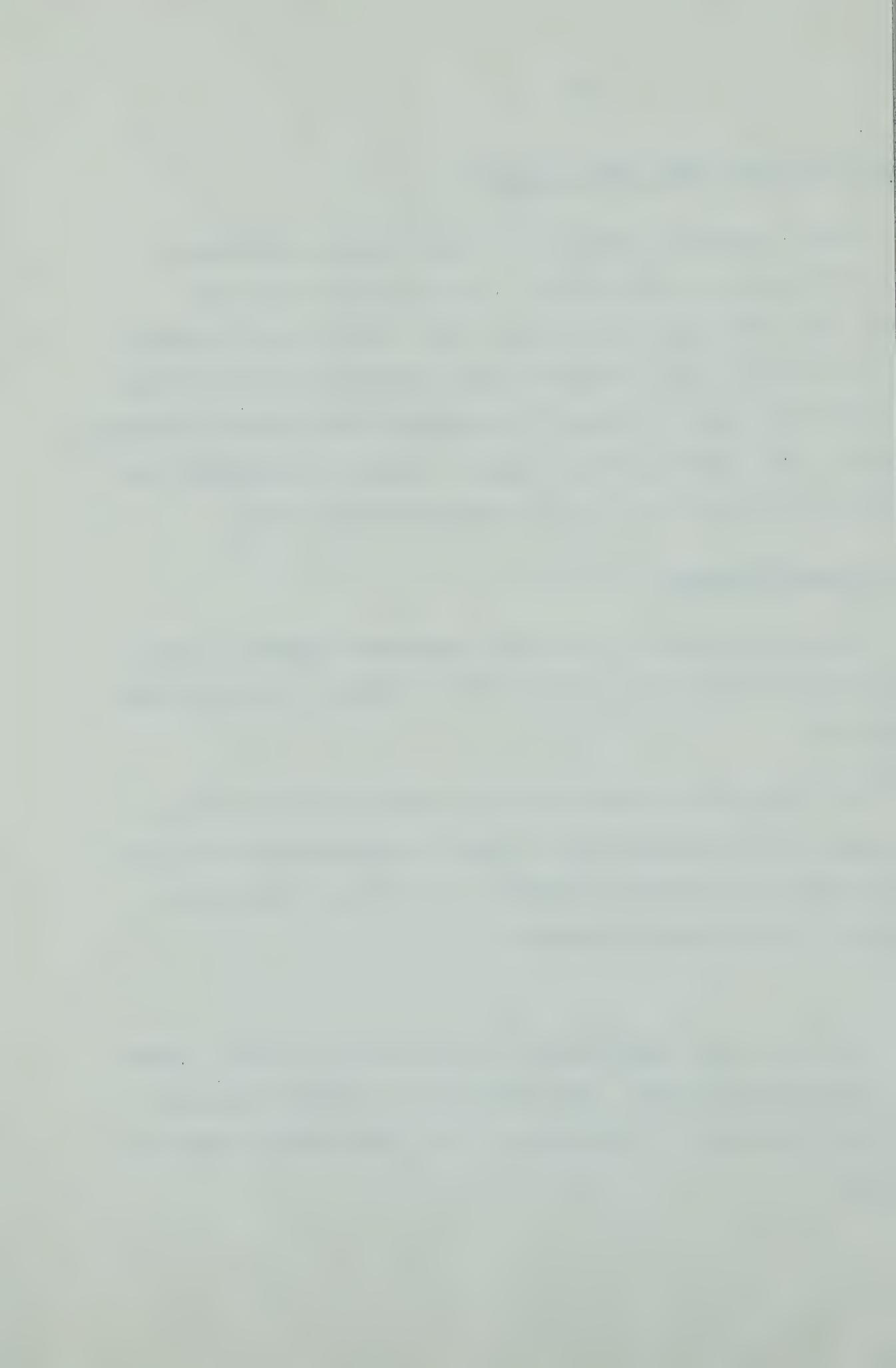
Total Budgetary estimates for the Mineral and Energy Resources Program are \$53,817,000 - up \$5,257,000 from the previous year (Estimates Book, page 5-2). This total includes \$19,945,000 (page 5-13) for grants and contributions (including \$14,210,000 for payments under the Emergency Gold Mining Assistance Act (page 5-22), \$3,207,000 for capital works and equipment and \$30,665,000 for operations and maintenance (page 5-12).

EARTH SCIENCES PROGRAM

Total estimates for the Earth Sciences Program are (See Estimates Book page 5-2) - \$29,269,000 in 1972-73, down \$20,000 from 1971-72.

The increase in MERP activities results mainly from the stepped-up effort related to the study of energy policy and the administration of rapidly intensified oil and gas exploration activity in the offshore frontiers.

Of note under expenditures on the ESP side is the Canada Centre for Remote Sensing. This program will really get going later this year with the launching of the first Earth Resources Satellite.



I would point out to the Committee that the Department has gone to a partial cost-recovery system in estimates for 1972-73 for public relations and computer science services. The new approach recovers funds from operating branches and Department of the Environment. Essentially, it re-distributes costs this year, but should improve efficiency and identification of costs for program planning and budgeting.

SOME ADDED HIGHLIGHTS

Mr. Chairman, at this point I will very quickly mention some departmental activities which illustrate the close relationship of science, resources and their importance to Canada in a national and international context.

- During 1972-73 the Terrain Sciences Division of the Geological Survey will continue its program of terrain investigations in the Mackenzie Valley, Mackenzie Delta and adjacent Arctic coastal region.
- The Geological Survey of Canada is also beginning a new phase of work in the northern Precambrian Shield - that of regional multidisciplinary geological surveys. Teams of geologists will provide more precise information on geological framework of the most promising mineral belts of the Northern Shield than that obtained during the earlier National Reconnaissance in order to provide

the Department and industry with a more accurate basis for estimating the potential abundance and probable distribution of mineral resources of this vast area.

- At the Institute of Sedimentary and Petroleum Geology in Calgary, the geological and geophysical mapping and research program in petroleum basins of the Arctic Islands and the Northern Mainland is continuing at the maximum level permitted by the limited resources available.
- A new program, assisted by statistics to produce first quantitative estimates of potential mineral resources, nationally and regionally, based on Earth Science data.
- A first systematic inventory of the trace element content of 40,000 square miles in N.W.T., undertaken primarily as a basis for estimating potential mineral resources of the region and to facilitate their discovery, the results will also be useful to management of the environment and for national health purposes.
- The Geological Survey of Canada is undertaking in 1972 what will probably be the first step towards a national geochemical inventory by carrying out a \$250,000 survey of 40,000 square miles of the District of Mackenzie, southeast of Great Bear Lake. Nation-wide geological surveys have been carried out for more than 100 years,

nation-wide geophysical surveys have been undertaken for about ten years, and this geochemical work will now begin to fill the largest remaining gap in our evidence relating to the country's mineral resources.

Hitherto, Earth Science studies in Canada, as in all other countries, have proceeded in a somewhat patchwork fashion, one type of survey here, another type of survey there. All earth scientists, whether in universities, company-employed or Government-employed, are aware of the increasing need to assemble the results of all the different types of observations, and achieve greater standardization in order to make full use of modern computer-based mathematical analysis techniques. GSC is playing a key role in developing and co-ordinating national standards in geophysics and geochemistry as well as in its traditional field of geology.

- Data on the gravity field are very important in the exploration for petroleum and the Gravity Division has scheduled a number of programs in the Arctic, including an area of the Beaufort Sea, and a section near Norwegian Bay, just south of the Panarctic oil find on Ellesmere Island. It will also continue the gravity survey of the eastern offshore during the current field season which

will be carrying out a detailed study of an area of high mineral potential in the Labrador trough, in the hope of providing a better understanding of the processes leading to mineral accumulation. If this effort is a success, it is planned to extend it to another mining area still to be selected.

- The Department's Mines Branch will undertake a 5-year \$3.3 million program in an effort to develop better engineering procedures on open pit mine walls. The objective will be to reduce the physical hazard and cost and to improve environmental standards. Preliminary estimates indicate that use of new slope designs might reduce excavation of waste rock by some 35 million tons per year.
- The Department has sponsored a unique co-operative program with certain companies in the oil industry for the conduct of a geophysical survey in the Sverdrup Basin. A refraction survey line will be measured across the Basin in order to provide basic data to define the rock structure and geological history. At the same time, the Earth Physics Branch of EMR will simultaneously obtain gravity and deep crustal seismic information. The purpose of the work is to devise a better means for calculating the oil-bearing potential in this Basin located in the northern part of Canada's Arctic Islands. The Geological Survey will provide

\$100,000 and scientific and technical services, with various private industry companies providing \$300,000. The study will not discover any oil or gas, but will provide valuable clues for this search.

THE ENVIRONMENT

It is inevitable that, as the result of the processing of ores and minerals, waste products are produced that are deleterious to the environment which may be either physically or aesthetically harmful.

The Mines Branch is giving increasing consideration to these problems and has initiated a number of projects with the objective of protecting the air, water and land environment from pollution arising out of mining and metallurgical operations.

In this work we are concerned with improving combustion processes, reduce or eliminate toxic gases, with the elimination of heavy metals from aqueous effluent streams by chemical methods, and by undertaking research on new methods of metals extraction in which the effluent waste materials are reduced in quantity under carefully controlled conditions.

With my concurrence, the Minister of the Environment announced in Vancouver on March 13th last, that exploration and drilling for oil would be excluded from sensitive offshore zones. Our Departments will work together on the definition of these offshore zones which,

in any case, will constitute a very small percentage of the total offshore acreage.

I want to confirm the Government's position that, subject to this zoning, exploration and drilling will be encouraged in the offshore frontier, in strict adherence to regulations currently enforced by my Department, and judged among the most stringent anywhere in the world.

On the international front, the United Nations Conference on the Human Environment in Stockholm will face up to problems of continued prosperity and the quality of life on this planet and will deal directly for the first time with the international aspects of resources management and environmental quality. My Department expects to play a key role in Canada's participation at Stockholm.

CONCLUSION

In concluding this presentation, I would like to make three final points:

- 1) The Government of Canada must clearly adopt national policies for minerals and energy which get the most out of the national wealth for the country as a whole. Our ability to carry out this mission requires a precise knowledge of the resource base, a close understanding of national targets by resource industries and the Provinces,

and a Federal viewpoint which seeks to accommodate regional economic forces in its broader strategies for industrial and social development.

- 2) Critical to the national stance with respect to our resource industries is the international environment in which they compete for markets and for capital. All indications point to huge capital requirements in the energy and resource sector to the year 2000.
 - 3) The challenges which confront Canada in the form of mammoth resource developments, escalating capital costs, complex marketing problems and the broader issues of economic growth and the quality of life, attest to the need for increasing national direction of resource development - for the good of all Canadians.

Thank you

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06917 Pam:042 [Macdonald, D.]
28/3/72.

MACDONALD, D.S.

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